

PATENT COOPERATION TREATY

TRANSLATION

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

NT1852PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/019001

International filing date (day/month/year)

20.12.2004

Priority date (day/month/year)

06.02.2004

International Patent Classification (IPC) or both national classification and IPC

Applicant

Renesas Technology Corp.

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/019001

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
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International application No.

PCT/JP2004/019001

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-18</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-18</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-18</u>	YES
	Claims	_____	NO

2. Citations and explanations:

Document 1: JP 2002-512439 A (Energy Conversion Devices, Inc.), 23 April 2002, full text & WO 1999/054128 A1
 Document 2: JP 2001-502848 A (Energy Conversion Devices, Inc.), 27 February 2001, full text & WO 1998/019350 A1
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 Document 7: JP 55-008830 B1 (Matsushita Electric Industrial Co., Ltd.), 06 March 1980, full text
 Document 8: JP 2003-229537 A (Hitachi, Ltd.), 15 August 2003, full text & US 2003/0146469 A1

The storage disclosed in and supported by the specification and having the following (1) and (2) constitutions is not described in any of the documents cited in the ISR and is non-obvious to a person skilled in the art.

Therefore, the inventions of claims 1 through 18 are not described in any of the documents cited in the ISR and are non-obvious to a person skilled in the art.

(1) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

WRITTEN OPINION OF THE
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International application No.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

What is disclosed in the meaning of PCT Article 5 is obtaining high heat resistance in a phase-change memory by means of a storage having the following (1) and (2) constitutions.

(1) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

(2) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein it comprises a plurality of memory cells and a plurality of word lines for selecting the above-described memory cells and a plurality of data lines disposed so as to intersect the above-described plurality of word lines and for reading signals from the above-described plurality of memory cells; the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

Thus, what is disclosed in the meaning of PCT Article 5 is merely a very small part of the inventions of claims 1 through 18, and is not adequately supported in the meaning of PCT Article 6.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

(2) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein it comprises a plurality of memory cells and a plurality of word lines for selecting the above-described memory cells and a plurality of data lines disposed so as to intersect the above-described plurality of word lines and for reading signals from the above-described plurality of memory cells; the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

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**WRITTEN OPINION OF THE
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International application No.

PCT/JP2004/019001

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-18	YES
	Claims		NO
Inventive step (IS)	Claims	1-18	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims		NO

2. Citations and explanations:

Document 1: JP 2002-512439 A (Energy Conversion Devices, Inc.); 23 April 2002, full text & WO 1999/054128 A1
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The storage disclosed in and supported by the specification and having the following (1) and (2) constitutions is not described in any of the documents cited in the ISR and is non-obvious to a person skilled in the art.

Therefore, the inventions of claims 1 through 18 are not described in any of the documents cited in the ISR and are non-obvious to a person skilled in the art.

(1) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

WRITTEN OPINION OF THE
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International application No.

PCT/JP2004/019001

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

What is disclosed in the meaning of PCT Article 5 is obtaining high heat resistance in a phase-change memory by means of a storage having the following (1) and (2) constitutions.

(1) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

(2) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein it comprises a plurality of memory cells and a plurality of word lines for selecting the above-described memory cells and a plurality of data lines disposed so as to intersect the above-described plurality of word lines and for reading signals from the above-described plurality of memory cells; the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

Thus, what is disclosed in the meaning of PCT Article 5 is merely a very small part of the inventions of claims 1 through 18, and is not adequately supported in the meaning of PCT Article 6.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

(2) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein it comprises a plurality of memory cells and a plurality of word lines for selecting the above-described memory cells and a plurality of data lines disposed so as to intersect the above-described plurality of word lines and for reading signals from the above-described plurality of memory cells; the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

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International Patent Classification (IPC) or both national classification and IPC

Applicant Renesas Technology Corp.
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<p>1. This opinion contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 5%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 25%;">Box No. I</td> <td>Basis of the opinion</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>2. FURTHER ACTION</p> <p>If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.</p> <p>If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.</p> <p>For further options, see Form PCT/ISA/220.</p> <p>3. For further details, see notes to Form PCT/ISA/220.</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the opinion	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Box No. 1

Basis of this opinion

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Novelty (N)	Claims	1-18	YES
	Claims		NO
Inventive step (IS)	Claims	1-18	YES
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In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

(2) A storage consisting of a storage layer that stores information by causing a reversible phase change between a crystalline phase and a noncrystalline phase, wherein it comprises a plurality of memory cells and a plurality of word lines for selecting the above-described memory cells and a plurality of data lines disposed so as to intersect the above-described plurality of word lines and for reading signals from the above-described plurality of memory cells; the total content of at least one element selected from the group consisting of Ge and Sb or at least one element selected from the group consisting of Ge and Sb, and Bi is equal to or greater than 2 atom% and less than 25 atom%, the content of Te is equal to or greater than 40 atom% and equal to or less than 65 atom%, and the total content of at least one element selected from the group consisting of Zn or Zn and Co and N is equal to or greater than 20 atom% and less than or equal to 50 atom% and consisting of a memory element that has an electrode formed with the above-described storage layer on both faces.

特許協力条約

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REC'D 10 FEB 2005

WIPO

PCT

PCT
国際調査機関の見解書
(法施行規則第40条の2)
(PCT規則43の2.1)

発送日
(日.月.年)

08.02.2005

出願人又は代理人
の書類記号 NT1852PCT

今後の手続きについては、下記2を参照すること。

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出願人 (氏名又は名称)

株式会社ルネサステクノロジ

1. この見解書は次の内容を含む。

☒ 第I欄 見解の基礎

☐ 第II欄 優先権

☐ 第III欄 新規性、進歩性又は産業上の利用可能性についての見解の不作成

☐ 第IV欄 発明の単一性の欠如

☒ 第V欄 PCT規則43の2.1(a)(i)に規定する新規性、進歩性又は産業上の利用可能性についての見解、それを裏付けるための文献及び説明

☐ 第VI欄 ある種の引用文献

☐ 第VII欄 国際出願の不備

☒ 第VIII欄 国際出願に対する意見

2. 今後の手続き

国際予備審査の請求がされた場合は、出願人がこの国際調査機関とは異なる国際予備審査機関を選択し、かつ、その国際予備審査機関がPCT規則66.1の2(b)の規定に基づいて国際調査機関の見解書を国際予備審査機関の見解書とみなさない旨を国際事務局に通知していた場合を除いて、この見解書は国際予備審査機関の最初の見解書とみなされる。

この見解書が上記のように国際予備審査機関の見解書とみなされる場合、様式PCT/ISA/220を送付した日から3月又は優先日から22月のうちいずれか遅く満了する期限が経過するまでに、出願人は国際予備審査機関に、適当な場合は補正書とともに、答弁書を提出することができる。

さらなる選択肢は、様式PCT/ISA/220を参照すること。

3. さらなる詳細は、様式PCT/ISA/220の備考を参照すること。

見解書を作成した日

26.01.2005

名称及びあて先

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様式PCT/ISA/237 (表紙) (2004年1月)

第 I 欄 見解の基礎

1. この見解書は、下記に示す場合を除くほか、国際出願の言語を基礎として作成された。

- ☐ この見解書は、_____ 語による翻訳文を基礎として作成した。
それは国際調査のために提出された PCT 規則 12.3 及び 23.1(b) にいう翻訳文の言語である。

2. この国際出願で開示されかつ請求の範囲に係る発明に不可欠なヌクレオチド又はアミノ酸配列に関して、以下に基づき見解書を作成した。

- a. タイプ ☐ 配列表
☐ 配列表に関連するテーブル
- b. フォーマット ☐ 書面
☐ コンピュータ読み取り可能な形式
- c. 提出時期 ☐ 出願時の国際出願に含まれる
☐ この国際出願と共にコンピュータ読み取り可能な形式により提出された
☐ 出願後に、調査のために、この国際調査機関に提出された

3. ☐ さらに、配列表又は配列表に関連するテーブルを提出した場合に、出願後に提出した配列若しくは追加して提出した配列が出願時に提出した配列と同一である旨、又は、出願時の開示を超える事項を含まない旨の陳述書の提出があった。

4. 補足意見：

第V欄 新規性、進歩性又は産業上の利用可能性についてのPCT規則43の2.1(a)(i)に定める見解、
それを裏付ける文献及び説明

1. 見解

新規性 (N)	請求の範囲 1-18	有
	請求の範囲	無
進歩性 (IS)	請求の範囲 1-18	有
	請求の範囲	無
産業上の利用可能性 (IA)	請求の範囲 1-18	有
	請求の範囲	無

2. 文献及び説明

文献1: JP 2002-512439 A (エネルギー コンバージョン デバイス インコーポレイテッド) 2002. 04. 23, 全文
&WO 1999/054128 A1
文献2: JP 2001-502848 A (エネルギー コンバージョン デバイス インコーポレイテッド) 2001. 02. 27, 全文
&WO 1998/019350 A1
文献3: JP 11-514150 A (エネルギー コンバージョン デバイス インコーポレイテッド) 1999. 11. 30, 全文
&WO 1997/015954 A1
文献4: JP 11-510317 A (エネルギー コンバージョン デバイス インコーポレイテッド) 1999. 09. 07, 全文
&WO 1997/005665 A1
文献5: WO 2003/050872 A1 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 2003. 06. 19, 全文
文献6: WO 2000/054982 A1 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 2000. 09. 21, 全文
文献7: JP 55-008830 B1 (松下電器産業株式会社) 1980. 03. 06, 全文
文献8: JP 2003-229537 A (株式会社日立製作所) 2003. 08. 15, 全文
&US 2003/0146469 A1

明細書に開示され、裏付けられている下記(1)及び(2)の構成を有する記憶装置について、国際調査報告に引用されたいずれの文献にも記載されておらず、当業者にとって自明なものでもない。

したがって、請求の範囲1乃至18に係る発明は、国際調査報告に引用されたいずれの文献にも記載されておらず、当業者にとって自明なものでもない。

(1) Ge及びSbよりなる群から選ばれた少なくとも1元素、又はGe及びSbよりなる群から選ばれた少なくとも1元素並びにBiを合計で2原子%以上25原

第四欄 国際出願に対する意見

請求の範囲、明細書及び図面の明瞭性又は請求の範囲の明細書による十分な裏付についての意見を次に示す。

PCT第5条の意味において開示されているのは、下記(1)及び(2)の構成を有する記憶装置によって、相変化メモリにおいて高い耐熱性を得たことである。

(1) Ge及びSbよりなる群から選ばれた少なくとも1元素、又はGe及びSbよりなる群から選ばれた少なくとも1元素並びにBiを合計で2原子%以上25原子%未満、Teを40原子%以上65原子%以下、Zn、又はZn並びにCo及びNよりなる群から選ばれた少なくとも1元素を合計で20原子%以上50原子%以下それぞれ含み、結晶相と非晶質相との間で可逆的な相変化を起こすことにより情報を記憶する記憶層と、前記記憶層の両面に形成された電極とを有するメモリ素子からなる記憶装置。

(2) 複数のメモリセルと前記複数のメモリセルを選択する複数のワード線と、前記複数のワード線と直交するように配置され、前記複数のメモリセルから信号が読み出される複数のデータ線とを有し、前記複数のメモリセルの各々は、Ge及びSbよりなる群から選ばれた少なくとも1元素、又はGe及びSbよりなる群から選ばれた少なくとも1元素並びにBiを合計で2原子%以上25原子%未満、Teを40原子%以上65原子%以下、Zn、又はZn並びにCo及びNよりなる群から選ばれた少なくとも1元素を合計で20原子%以上50原子%以下それぞれ含み、結晶相と非晶質相との間で可逆的な相変化を起こすことにより情報を記憶する記憶層と、前記記憶層の両面に形成された電極とを有する記憶装置。

そうすると、PCT第5条の意味において開示されているのは、請求の範囲1乃至18に係る発明のごくわずかな部分にすぎず、PCT第6条の意味で十分に裏付けられていない。

補充欄

いずれかの欄の大きさが足りない場合

第 V 欄の続き

子%未満、Teを40原子%以上65原子%以下、Zn、又はZn並びにCo及びNよりなる群から選ばれた少なくとも1元素を合計で20原子%以上50原子%以下それぞれ含み、結晶相と非晶質相との間で可逆的な相変化を起こすことにより情報を記憶する記憶層と、前記記憶層の両面に形成された電極とを有するメモリ素子からなる記憶装置。

(2) 複数のメモリセルと前記複数のメモリセルを選択する複数のワード線と、前記複数のワード線と直交するように配置され、前記複数のメモリセルから信号が読み出される複数のデータ線とを有し、前記複数のメモリセルの各々は、Ge及びSbよりなる群から選ばれた少なくとも1元素、又はGe及びSbよりなる群から選ばれた少なくとも1元素並びにBiを合計で2原子%以上25原子%未満、Teを40原子%以上65原子%以下、Zn、又はZn並びにCo及びNよりなる群から選ばれた少なくとも1元素を合計で20原子%以上50原子%以下それぞれ含み、結晶相と非晶質相との間で可逆的な相変化を起こすことにより情報を記憶する記憶層と、前記記憶層の両面に形成された電極とを有する記憶装置。